

Application No. 09/824,765
Amendment dated December 2, 2003
Reply to Office Action of October 2, 2003

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously amended) A method of preconditioning a resin useful for removal of organic impurities from a hydrogen peroxide solution, comprising the steps of:

- (a) rinsing the adsorbent resin with deionized water;
- (b) contacting the adsorbent resin with an acid solution; and
- (c) rinsing the acid-treated adsorbent resin with deionized water.

Claim 2 (original) The method of claim 1, wherein the acid solution is selected from the group consisting of a hydrochloric acid solution, a nitric acid solution and a sulfuric acid solution.

Claim 3 (original) The method of claim 2, wherein the acid solution is a hydrochloric acid solution.

Claim 4 (original) The method of claim 3, wherein the molar ratio of hydrochloric acid to water in the hydrochloric acid solution is from about 1:100 to 1:90.

Claim 5 (original) The method of claim 1, wherein step (b) is conducted for from about 3 to 8 hours.

Claim 6 (previously amended) The method of claim 1, wherein step (b) comprises soaking the adsorbent resin in the acid solution in a batch mode.

Claim 7 (previously amended) The method of claim 1, wherein step (b) further comprises separating the acid solution into a first portion and a second portion,

Application No. 09/824,765
Amendment dated December 2, 2003
Reply to Office Action of October 2, 2003

soaking the adsorbent resin in the first portion of the acid solution in a batch mode, separating the adsorbent resin from the first portion of the acid solution and rinsing the adsorbent resin with the second portion of the acid solution.

Claim 8 (previously amended) The method of claim 1, wherein the contacting in step (b) comprises introducing the adsorbent resin and the acid solution into a vessel separating the adsorbent resin and the acid solution and contacting the adsorbent resin with a second acid solution.

Claim 9 (previously amended) The method of claim 1, wherein the adsorbent resin is hydrophobic.

Claim 10 (previously amended) The method of claim 9, wherein the adsorbent resin is AMBERLITE XAD-4 or AMBERSORB 563.

Claim 11 (currently cancelled)

Claim 12 (currently cancelled)

Claim 13 (currently cancelled)

Claim 14 (currently cancelled)

Claim 15 (currently cancelled)

Claim 16 (currently amended) The method of claim 45 25, wherein the hydrogen peroxide solution has a hydrogen peroxide concentration of 50 wt% or less.

Claim 17 (original) The method of claim 16, wherein the hydrogen peroxide solution has a hydrogen peroxide concentration of about 30 wt%.

Application No. 09/824,765
Amendment dated December 2, 2003
Reply to Office Action of October 2, 2003

Claim 18 (previously amended) The method of claim 15 25, wherein the adsorbent resin is hydrophobic.

Claim 19 (previously amended) The method of claim 18, wherein the adsorbent resin is AMBERLITE XAD-4 or AMBERSORB 563.

Claim 20 (original) The method of claim 15 25, wherein the temperature of the hydrogen peroxide solution inside the column is essentially constant during the step of passing the hydrogen peroxide solution through the column.

Claim 21 (previously amended) The method of claim 15 25, wherein the hydrogen peroxide concentration in the hydrogen peroxide solution is maintained essentially constant during the step of contacting the adsorbent resin with the hydrogen peroxide solution.

Claim 22 (original) The method of claim 15 25, wherein the hydrogen peroxide solution is passed through the column in an upflow mode.

Claim 23 (original) The method of claim 15 25, further comprising passing the hydrogen peroxide solution through a second column for removing organic impurities from the hydrogen peroxide solution, connected in series with and downstream from the first column.

Claim 24 (previously amended) The method of claim 15 25, further comprising passing the hydrogen peroxide solution through one or more columns containing an ion-exchange resin bed after passing the hydrogen peroxide solution through the column containing the preconditioned adsorbent resin.

Claim 25 (new) A method of removing organic impurities from a hydrogen peroxide solution, comprising:

Application No. 09/824,765
Amendment dated December 2, 2003
Reply to Office Action of October 2, 2003

- (a) rinsing an adsorbent resin with deionized water;
- (b) contacting the adsorbent resin with an acid solution;
- (c) rinsing the acid treated adsorbent resin with deionized water;
- (d) introducing the adsorbent resin into an adsorbent resin bed
contained within a column;
- (e) passing the hydrogen peroxide solution through the column
containing the adsorbent resin, the hydrogen peroxide
solution having not passed through ion-exchange resin.

Claim 26 (new) An adsorbent resin preconditioned by the method comprising:

- (a) rinsing the adsorbent resin with deionized water;
- (b) contacting the adsorbent resin with an acid solution, and
- (c) rinsing the acid-treated adsorbent resin with deionized water,
wherein said preconditioned resin is effective to maintain an
essentially constant temperature when contacted with a
hydrogen peroxide solution for at least eleven hours.

Application No. 09/824,765
Amendment dated December 2, 2003
Reply to Office Action of October 2, 2003

REMARKS / ARGUMENTS

In complete response to the outstanding Official Action of October 2, 2003, on the above-identified application, reconsideration is respectfully requested. Claims 1-10, and 16-26 remain in this application. Claims 11-15 have been cancelled. Claims 25 and 26 have been added.

Claim 25 combines the elements of Claim 1 and the currently cancelled Claim 15, to better define the invention. Claim 26 combines the elements of Claims 1 and the currently cancelled Claims 11 and 14, to better define the invention.

Allowable Subject Matter:

Applicants gratefully acknowledge the indication that Claims 1-10 are free of the prior art.

Claim Rejections Under 35 U.S.C. § 102:

Claims 11 – 24 stand rejected under 35 U.S.C. § 102 (e) as anticipated by, or in the alternative, under 35 U.S.C. § 103 (a) as being obvious over Saito et al. '109. Claims 11-15 have been cancelled, which renders this rejection moot. Applicants respectfully maintain that Claims 16-26 of the present invention are neither anticipated by nor obvious over Saito et al. '109.

Saito et al. '109 refers to a porous, organic or inorganic adsorbent, having no ion exchange ability, which is chemically inert to an aqueous solution of hydrogen peroxide.

Application No. 09/824,765
Amendment dated December 2, 2003
Reply to Office Action of October 2, 2003

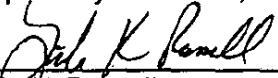
In contrast to Saito et al. '109, new independent Claim 26, requires a method for preconditioning an adsorbent resin. In further contrast to Saito et al. '109, new independent Claim 26, requires that this adsorbent resin "is effective to maintain an essentially constant temperature when contacted with a hydrogen peroxide solution for at least eleven hours." One of ordinary skill in the art would find that the present invention is neither taught nor suggested by Saito et al. '109.

CONCLUSION

In view of the current amendments, the present application now stands in condition for allowance. Early notice to this effect is earnestly solicited.

Should the Examiner believe that a telephone call would expedite prosecution of this application, he is invited to call the undersigned attorney at the number listed below.

Respectfully submitted,



Linda K. Russell
Registration No. 34,918

Date: December 2, 2003
Air Liquide
2700 Post Oak Blvd., Suite 1800
Houston, Texas 77056
(713) 624-8956 Phone
(713) 624-8950 Fax

previous

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended): A method of preconditioning a an adsorbent resin useful for removal of organic impurities from a hydrogen peroxide solution, comprising the steps of:
 - (a) rinsing the adsorbent resin with deionized water;
 - (b) contacting the adsorbent resin with an acid solution; and
 - (c) rinsing the acid-treated adsorbent resin with deionized water.
2. (original): The method of claim 1, wherein the acid solution is selected from the group consisting of a hydrochloric acid solution, a nitric acid solution and a sulfuric acid solution.
3. (original): The method of claim 2, wherein the acid solution is a hydrochloric acid solution.
4. (original): The method of claim 3, wherein the molar ratio of hydrochloric acid to water in the hydrochloric acid solution is from about 1:100 to 1:90.
5. (original): The method of claim 1, wherein step (b) is conducted for from about 3 to 8 hours.
6. (currently amended): The method of claim 1, wherein step (b) comprises soaking the adsorbent resin in the acid solution in a batch mode.
7. (currently amended): The method of claim 6, wherein step (b) further comprises separating the acid solution into a first portion and a second portion, soaking the adsorbent resin in the first portion of the acid solution in a batch mode, separating the adsorbent resin and from the first portion of the acid

~~solution and contacting rinsing the adsorbent resin with a the second portion of the acid solution, which is of the same type and concentration as the acid solution.~~

8. (currently amended): The method of claim 1, wherein the contacting in step (b) comprises introducing the adsorbent resin and the acid solution into a vessel separating the adsorbent resin and the acid solution and contacting the adsorbent resin with a second acid solution.

9. (currently amended): The method of claim 1, wherein the adsorbent resin is hydrophobic.

10. (currently amended): The method of claim 9, wherein the adsorbent resin is AMBERLITE XAD-4 or AMBERSORB 563.

11. (currently amended): A An adsorbent resin preconditioned by the method of claim 1.

12. (currently amended): The adsorbent resin of claim 11, wherein the adsorbent resin is hydrophobic.

13. (currently amended): The adsorbent resin of claim 11, wherein the adsorbent resin is AMBERLITE XAD-4 or AMBERSORB 563.

14. (currently amended): The adsorbent resin of claim 11, wherein the adsorbent resin is effective to maintain an essentially constant temperature when contacted with a hydrogen peroxide solution for at least eleven hours.

15. (currently amended): A method of removing organic impurities from a hydrogen peroxide solution, comprising passing the hydrogen peroxide solution through a column containing a an adsorbent resin bed, wherein the adsorbent

resin making up the adsorbent resin bed has been preconditioned by a method comprising the steps of:

- (a) rinsing the adsorbent resin with deionized water;
- (b) contacting the adsorbent resin with an acid solution; and
- (c) rinsing the acid treated adsorbent resin with deionized water.

16. (original): The method of claim 15, wherein the hydrogen peroxide solution has a hydrogen peroxide concentration of 50 wt% or less.

17. (original): The method of claim 16, wherein the hydrogen peroxide solution has a hydrogen peroxide concentration of about 30 wt%.

18. (currently amended): The method of claim 15, wherein the adsorbent resin is hydrophobic.

19. (currently amended): The method of claim 18, wherein the adsorbent resin is AMBERLITE XAD-4 or AMBERSORB 563.

20. (original): The method of claim 15, wherein the temperature of the hydrogen peroxide solution inside the column is essentially constant during the step of passing the hydrogen peroxide solution through the column.

21. (currently amended): The method of claim 15, wherein the hydrogen peroxide concentration in the hydrogen peroxide solution is maintained essentially constant during the step of contacting the adsorbent resin with the hydrogen peroxide solution.

22. (original): The method of claim 15, wherein the hydrogen peroxide solution is passed through the column in an upflow mode.

23. (original): The method of claim 15, further comprising passing the hydrogen peroxide solution through a second column for removing organic impurities from

the hydrogen peroxide solution, connected in series with and downstream from the first column.

24. (currently amended): The method of claim 15, further comprising passing the hydrogen peroxide solution through one or more columns containing an ion-exchange resin bed after passing the hydrogen peroxide solution through the column containing the preconditioned adsorbent resin.